WHAT IS CLAIMED IS:

1. A torsional vibration damper, comprising:

a primary mass adapted to be coupled to an engine crankshaft for rotation about a rotational axis of the engine crankshaft, the primary mass defining a substantially ring-shaped chamber that is divided into at least two portions;

a secondary mass relatively rotatably connected to the primary mass and connectable with a clutch; and

a damping unit for coupling the primary and secondary masses to each other in a rotationally elastic manner,

wherein the damping unit comprises:

a plurality of elastic members situated in series and disposed one after the other within the divided portions of the ring-shaped chamber;

a pair of end guides slidably disposed within each divided portion of the ring-shaped chamber and supporting outer ends of the end elastic members among the plurality of elastic members; and

a wedge-shaped friction member slidably disposed between neighboring elastic members, the wedge-shaped friction member comprising an inner wedge and an outer wedge that are elastically supported by the neighboring elastic members such that the outer and inner wedges move in opposite directions.

2. The torsional vibration damper of claim 1, wherein the inner wedge is provided with a first slanted contacting surface, the outer wedge is provided with a second slanted contacting surface, and the inner and outer wedges contact each other through the first and second slanted contacting surfaces, so that the outer wedge is urged to move outwardly and the inner wedge is urged to move inwardly when the neighboring elastic members are compressed.

3. The torsional vibration damper of claim 2, wherein a mean operating radius of the elastic member supporting the outer wedge is greater than a mean operating radius of the elastic member supporting the inner wedge.

4. The torsional vibration damper of claim 1, wherein the elastic member is a coil spring.

5. The torsional vibration damper of claim 4, wherein a first coil spring receiving hole is formed on one side of the inner wedge and a first slanted contacting surface is formed on the other side of the inner wedge, wherein a second coil spring receiving hole is formed on one side of the outer wedge and a second slanted contacting surface is formed on the other side of the outer wedge, and wherein the first slanted contacting surface and the second contacting surface contact each other so that the outer wedge is urged to move outwardly and the inner wedge is urged to move inwardly when the neighboring coil springs are compressed.

6. The torsional vibration damper of claim 5, wherein a bottom surface of the first coil spring receiving hole is slanted so that the bottom surface and an end surface of the coil spring are angled when the coil spring is not compressed.

7. The torsional vibration damper of claim 6, wherein the bottom surface of the first coil spring receiving hole is slanted such that an outer end portion of the coil spring contacts the bottom surface and an inner end portion of the coil spring does not contact the bottom surface when the coil spring is not compressed.

8. The torsional vibration damper of claim 5, wherein a bottom surface of the second coil spring receiving hole is slanted so that the bottom surface and an end surface of the coil spring are angled when the coil spring is not compressed.

9. The torsional vibration damper of claim 8, wherein the bottom surface of the second coil spring receiving hole is slanted such that the an outer end portion of the coil spring contacts the bottom surface and an inner end portion of the coil does not contact the bottom surface when the coil spring is not compressed.

10.The torsional vibration damper of claim 1, wherein a groove is formed on at least one of outer surfaces of the outer and inner wedges along a circumferential

direction of the ring-shaped chamber.

11.The torsional vibration damper of claim 1, wherein a groove is formed on at least one of outer surfaces of the outer and inner wedges along a direction substantially perpendicular to a circumferential direction of the ring-shaped chamber.

12.The torsional vibration damper of claim 1, wherein the ring-shaped chamber is divided into at least two portions by a protrusion that is formed on the primary mass, and an oil passageway is formed on at least one side of the protrusion.

13.The torsional vibration damper of claim 1, wherein the outer wedge is configured to move in a radially outward direction so that the outer wedge contacts an outer surface of the ring-shaped chamber, and the inner wedge is configured to move in a radially inward direction so that the inner wedge contract an inner surface of the ring-shaped chamber, when the elastic members are compressed.

14.The torsional vibration damper of claim 1, wherein at least one bushing is disposed between the primary mass and the secondary mass.

15.The torsional vibration damper of claim 1, wherein the ring-shaped chamber is at least partially filled with lubrication oil.

16.The torsional vibration damper of claim 1, further comprising a drive plate that is coupled to the secondary mass and is configured to compress the damping unit when a relative rotation between the primary mass and the secondary mass occurs.

17.The torsional vibration damper of claim 16, wherein at least two compression fins are provided on an outer circumference of the drive plate, the compression fins compressing the damping unit when the secondary mass relatively rotates with respect to the primary mass.

18.A torsional vibration damper comprising:

a primary mass adapted to be coupled to an engine crankshaft for rotation about a rotational axis of the engine crankshaft, the primary mass defining a substantially ring-shaped chamber that is divided into at least two portions;

a secondary mass relatively rotatably connected to the primary mass and connectable with a clutch; and

a damping unit for coupling the primary and secondary masses to each other in a rotationally elastic manner,

wherein the damping unit comprises:

a plurality of elastic members situated in series and disposed one after the other within the divided portion of the ring-shaped chamber;

a pair of end guides slidably disposed within each divided portion of the ring-shaped chamber and supporting outer ends of the end elastic members among the plurality of elastic members;

a wedge-shaped friction member slidably disposed between neighboring elastic members, the wedge-shaped friction member comprising an inner wedge and an outer wedge that are elastically supported by the neighboring elastic members such that the outer and inner wedges move in opposite directions; and

a concentrated mass friction member slidably disposed between the neighboring elastic members and being provided with a concentrated mass at a center portion thereof.

19.The torsional vibration damper of claim 18, wherein the concentrated mass has a triangular section.

20.The torsional vibration damper of claim 18, wherein the elastic member is a coil spring.

21.The torsional vibration damper of claim 20, wherein a first coil spring receiving hole is formed on one side of the concentrated mass friction member, a second coil spring receiving hole is formed on the other side of the concentrated mass friction member, one of the neighboring coil springs is inserted into the first coil sprig receiving hole and the other of the neighboring coil springs is inserted into the second coil spring

receiving hole.

22.The torsional vibration damper of claim 21, wherein a bottom surface of the first coil spring receiving hole is slanted so that the bottom surface and an end surface of the coil spring is angled when the coil spring is not compressed.

23.The torsional vibration damper of claim 21, wherein a bottom surface of the second coil spring receiving hole is slanted so that the bottom surface and an end surface of the coil spring is angled when the coil spring is not compressed.

24.The torsional vibration damper of claim 18, wherein a groove is formed on an outer surface of the concentrated mass friction member along a circumference direction of the ring-shaped chamber.

25.The torsional vibration damper of claim 18, wherein a groove is formed on an outer surface of the concentrated mass friction member along a direction substantially perpendicular to a circumferential direction of the ring-shaped chamber.

26.The torsional vibration damper of claim 18, wherein the inner wedge is provided with a first slanted contacting surface, the outer wedge is provided with a second slanted contacting surface, and the inner and outer wedges contact each other through the first and second slanted contacting surfaces, so that the outer wedge is urged to move outwardly and the inner wedge is urged to move inwardly when the neighboring elastic members are compressed.

27.The torsional vibration damper of claim 26, wherein the elastic member is a coil spring.

28.The torsional vibration damper of claim 27, wherein a first coil spring receiving hole is formed on one side of the inner wedge and a first slanted contacting surface is formed on the other side of the inner wedge, wherein a second coil spring receiving hole is formed on one side of the outer wedge and a second slanted contacting

surface is formed on the other side of the outer wedge, and wherein the first slanted contacting surface and the second contacting surface contact each other so that the outer wedge is urged to move outwardly and the inner wedge is urged to move inwardly when the neighboring coil springs are compressed.

29.The torsional vibration damper of claim 28, wherein a bottom surface of the first coil spring receiving hole is slanted so that the bottom surface and an end surface of the coil spring are angled when the coil spring is not compressed.

30.The torsional vibration damper of claim 28, wherein a bottom surface of the second coil spring receiving hole is slanted so that the bottom surface and an end surface of the coil spring are angled when the coil spring is not compressed.

31.The torsional vibration damper of claim 26, wherein a groove is formed on at least one of outer surfaces of the outer and inner wedges along a circumferential direction of the ring-shaped chamber.

32.The torsional vibration damper of claim 26, wherein a groove is formed on at least one of outer surfaces of the outer and inner wedges along a direction substantially perpendicular to a circumferential direction of the ring-shaped chamber.

33.The torsional vibration damper of claim 26, wherein the ring-shaped chamber is divided into at least two portions by a protrusion that is formed on the primary mass, and an oil passageway is formed on at least one side of the protrusion.

34.The torsional vibration damper of claim 18, wherein the outer wedge is configured to move in a radially outward direction so that the outer wedge contacts an outer surface of the ring-shaped chamber, and the inner wedge is configured to move in a radially inward direction so that the inner wedge contract an inner surface of the ring-shaped chamber, when the elastic members are compressed.

35.The torsional vibration damper of claim 18, wherein at least one bushing is

disposed between the primary mass and the secondary mass.

36.The torsional vibration damper of claim 18, wherein the ring-shaped chamber is at least partially filled with lubrication oil.

37.The torsional vibration damper of claim 18, further comprising a drive plate that is coupled to the secondary mass and is configured to compress the damping unit when a relative rotation between the primary mass and the secondary mass occurs.

38.The torsional vibration damper of claim 37, wherein at least two compression fins are provided on an outer circumference of the drive plate, the compression fins compressing the damping unit when the secondary mass relatively rotates with respect to the primary mass.

39.A torsional vibration damper comprising:

a primary mass adapted to be coupled to an engine crankshaft for rotation about a rotational axis of the engine crankshaft, the primary mass defining a substantially ring-shaped chamber that is divided into at least two portions;

a secondary mass relatively rotatably connected to the primary mass and connectable with a clutch; and

a damping unit for coupling the primary and secondary masses to each other in a rotationally elastic manner,

wherein the damping unit comprises a plurality of elastic members and at least one friction member disposed between the elastic members, and the elastic members have different mean operating radii.